**CMSC 214**

**Project\_9**

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**Screen Shots:**

A map with initial size of 4.

When the value is folds of the index key, it creates a linked list and attaches the new node into the linked list.

Graphical user interface, application

Description automatically generated

Search for the value 6:

Graphical user interface, application

Description automatically generated

After deleting the value of 2:

A picture containing diagram

Description automatically generated

After clicking Remove all:

Graphical user interface, text, application, email

Description automatically generated

Creating a new map with the size of 8:

Graphical user interface, text, application, email

Description automatically generated

The load factor is 0.75:

A picture containing graphical user interface

Description automatically generated

After it is at its limit, adding a node will increase the size of the map and the nodes will be allocated in the map again:

Graphical user interface, text, application, email

Description automatically generated

**Lessons Learned:**

This project was a challenging one for me. I took me a while to figure out the best way to display the animation in JavaFX. Although I solved a number of problems in this project, I still could not figure out how to display the Horizontal Box at the bottom (with the Buttons) of the FlowPane with the Canvas’ in it from getting cut from the view when the Map gets expanded. I appreciate if you could give me an idea about it in the comments.

Apart from it, since I already have the regular HashMap code, this project required me to search and read a lot to find a way to create a Linked List in a bucket at the required key index. I still don’t feel confident about using the complicated hashing functions such as the one provided in the book, but at least I learned what << , >>> or ^ operators are overall doing in the code.

I used Alert to provide information message since I was unable to attach it to the Pane. I guess I could have done it but registering an empty Text in the pane, and set its text with each message but I preferred to use a dialog box for this project.

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| **#** |  | **Y/N** | **Comments** |
|  | **Source java files** |  |  |
|  | **Files:** |  |  |
|  | **lastNameFirstInitial\_ProjectXX**.zip | **Y** |  |
|  | **lastNameFirstInitial\_ProjectXX**.doc | **Y** |  |
|  | **Program compiles** | **Y** |  |
|  | **Program runs** | **Y** |  |
|  | **Checklist is completed and included in the Documentation** | **Y** |  |
|  | **Documentation file:** |  |  |
|  | **Comprehensive Test Plan** | **Y** |  |
|  | **Screenshots based on Test Plan** | **Y** |  |
|  |  |  |  |
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|  |  |  |  |
|  | **Lessons Learned** | **Y** |  |